## CLAIMS

SB a1

1. A rotor for an electric motor, comprising:

a magnet having a rotation axis, said magnet being provided with a through hole extending coaxially with said rotation axis;

a shaft fixed concentrically to said magnet, said shaft including a portion fitted in said through hole, said portion having an axial interengagement length shorter than an axial length of said through hole; and

reinforcing means provided at least inside said through hole for ensuring a fixing force to securely hold said shaft in a predetermined position in said magnet.

2. A rotor as set forth in claim 1, wherein said magnet comprises an annular magnet material and a coating formed on a surface of said magnet material at least inside said through hole, and wherein said reinforcing means comprises said coating, said portion of said shaft being engaged with said coating in a face-to-face manner.

3. A rotor as set forth in claim 2, wherein said coating is made of a metal plating.

4. A rotor as set forth in claim 3, wherein said metal plating is an electroless plating.

5. A rotor as set forth in claim 3, wherein said metal plating includes at least one of a Ni-P electroless plating, a Ni-B electroless plating and a Ni-P-W electroless plating.

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6. A rotor as set forth in claim 3, wherein said metal plating has a thickness of at least 10 μm.

7. A rotor as set forth in claim 3, wherein said metal plating includes an electroless plating base layer and an electroplating top layer.

8. A rotor as set forth in claim 7, wherein said electroplating top layer is an Ni electroplating.

9. A rotor as set forth in claim 7, wherein said electroless plating base layer has a thickness in a range

of 0.5 μm to 2.0 μm.

10. A rotor as set forth in claim 7, wherein said electroplating top layer has a thickness of at least 3.0 μm.

11. A rotor as set forth in claim 3, wherein said magnet material is made of a bonded magnet material.

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12. A rotor as set forth in claim 11, wherein a dimensional relationship between said axial interengagement length of said portion of said shaft and said axial length of said through hole is defined as $T/5 \leqq t \leqq T/2$, in which "T" is said through hole axial length and "t" is said axial interengagement length.

13. A rotor as set forth in claim 11, wherein said portion of said shaft is tightly press-fitted in said through hole of said magnet, and wherein an interference of said portion in said through hole is in a range of 5 μm to 30 μm.

14. A rotor as set forth in claim 11, wherein said bonded magnet material is vacuum-impregnated with a bonding agent or filler.

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15. A rotor as set forth in claim 1, wherein said reinforcing means comprises an adhesive filled in a clearance defined between a reminder of said shaft other than said portion and said magnet inside said through hole.

16. A rotor as set forth in claim 15, wherein a dimensional relationship between said axial interengagement length of said portion of said shaft and said axial length of said through hole is defined as $T/5 \leqq t \leqq 4T/5$, in which "T" is said through hole axial length and "t" is said axial interengagement length.

17. A rotor as set forth in claim 15, wherein said adhesive is made of a thermosetting epoxy resin.

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18. A rotor as set forth in claim 15, wherein said magnet comprises an annular magnet material and a coating formed on a surface of said magnet material at least

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inside said through hole, and wherein said reinforcing means further comprises said coating, said portion of said shaft being engaged with said coating in a face-to-face manner.

19. A rotor as set forth in claim 18, wherein said coating is made of a metal plating.

20. A rotor as set forth in claim 18, wherein said coating is made of an organic substance layer.

21. A rotor as set forth in claim 18, wherein said magnet material is made of a bonded magnet material.

22. A rotor as set forth in claim 1, wherein said magnet contains rare-earth elements.

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23. Method of producing a rotor for an electric motor, comprising the steps of:

forming a coating on a surface of an annular magnet material and thereby providing a magnet having a rotation axis and a through hole extending coaxially with said rotation axis, said coating being arranged at least inside said through hole;

providing a shaft including a portion capable of being fitted in said through hole; and

inserting said shaft into said through hole of said magnet and tightly press-fitting said portion of said shaft in said through hole, until an axial interengagement length of said portion, shorter than an axial length of said through hole, is obtained.

24. A method as set forth in claim 23, wherein said magnet material is made of a bonded magnet material, wherein said coating is a metal plating, and further including a step of vacuum-impregnating said bonded magnet material with an adhesive before said step of forming said coating.

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25. A method as set forth in claim 23, wherein an interference of said portion in said through hole is adjusted by changing a thickness of said coating.

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26. Method of producing a rotor for an electric motor, comprising the steps of:

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providing a magnet having a rotation axis and a through hole extending coaxially with said rotation axis;

providing a shaft including a first portion capable of being fitted in said through hole and a second portion axially adjacent to said first portion for defining a clearance inside said through hole;

inserting said shaft into said through hole of said magnet and fitting said first portion of said shaft in said through hole, until an axial interengagement length of said first portion, shorter than an axial length of said through hole, is obtained; and

filling an adhesive in said clearance inside said through hole.

27. A method as set forth in claim 26, wherein said adhesive is vacuum-impregnated into said clearance.

28. A method as set forth in claim 26, wherein said magnet is made of an annular bonded magnet material, and further including a step of forming a coating on a surface of said bonded magnet material before said step of inserting said shaft.

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